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NOTES AND BRIEF ARTICLES

[Unsigned notes are by the editor]

Readers of MYCOLOGIA are invited to contribute to this department personal news items and notes or brief articles of interest to mycologists in general. Manuscript should be submitted before the middle of the month preceding the month in which this publication is issued.

It is said that eating the common ink-cap mushroom, *Coprinus atramentarius*, sometimes causes reddening of the face. Anyone who can corroborate this statement from his own experience or observation should publish the fact.

Dr. E. W. Olive, who has been connected with the Brooklyn Botanic Garden for several years, has retired from active scientific work to go into business with his brother at 904 Hume-Mansur Building, Indianapolis, Indiana.

A circle of fairy-ring mushrooms thirty feet in diameter was seen at Kingston, New York, July 10, in the yard of the famous old Dutch Reform Church. The mushrooms grew about the roots of trees, in the grass, and over graves with stones dating back as far as 1798.

The use of aged bean seed as a means of controlling bacterial blight of beans is advocated by C. W. Rapp in *Science*, p. 568, 1919. Seed four or five years old does not germinate well, but three-year-old seed yields a high percentage of vigorous plants with very little blight if the soil is free from the disease and no sources of infection are near.

Referring to the article entitled "Another New Truffle," published in the May number of *Mycologia*, Dr. C. L. Shear writes me as follows: "In order to make this story complete, I think it would be desirable to add a note referring to the fact that this

particular collection was mentioned by me in the *Asa Gray Bulletin* for December, 1899, under the heading 'A Truffle from Maryland.' If this connection is not pointed out it may not be known and confusion may arise. The specimens referred to in the note as *T. oligosperma* Tul. are the identical specimens which are described as the new species of *Tuber* in your article."

Excellent specimens of *Xanthoporia Andersoni* (Ellis & Ev.) Murrill were recently sent to the herbarium of the Garden for determination. They were collected on *Salix nigra* in Takoma Park, Maryland, May 5, 1920, by Hedgecock, Hahn, and Gravatt. This interesting species was first described from Newfield, New Jersey, where it was found by F. W. Anderson on an oak log. It has since been collected on poplar in Indiana, on oak in Missouri, and on elm or poplar in Ohio. The specimens recently received add a new host and a new state to its distribution.

Burt's eleventh paper on the Thelephoraceae of North America, published in the *Annals of the Missouri Botanical Garden* for November, 1919, includes *Tulasnella*, with 3 species; *Veluticeps*, with 1 species; *Mycobonia*, with 2 species; *Epithele*, with 2 species; and *Lachnocladium*, with 10 species from North America. The following are new or newly combined: *Veluticeps tabacina* (Cooke) Burt, comb. nov.; *Epithele sulphurea* Burt, sp. nov., on palmetto in Florida; *Lachnocladium bicolor* (Peck) Burt, comb. nov.; and *L. erectum* Burt, sp. nov., on dead wood in West Virginia. The members of this genus are coralloid fungi usually occurring on wood or soil rich in humus. They resemble species of *Clavaria*, but are tomentose and leathery rather than fleshy, and therefore inedible. The spores vary from hyaline to ochraceous and from smooth to aculeate. *Lachnocladium Micheneri* Berk & Curt. is our commonest temperate species, ranging from Canada to New Jersey and westward to Missouri.

According to Paravicini, since the cultivation of the "English" walnut has been greatly extended in Switzerland the importance

of the larger fungi which attack this valuable tree has correspondingly increased. *Polyporus igniarius*, *P. fomentarius*, *P. hispidus*, *P. cinnabarinus*, *P. sulphureus*, and certain other fungi are mentioned among the enemies of the walnut, but, strange to say, *Favolus europaeus* is considered the most virulent of them all. It gains entrance through wounds in the branches. The only known method of treatment is to remove all diseased branches and cover the cut surfaces with grafting wax. This species is known to be fond of our native hickory trees and should be further investigated.

Burt's paper on *Aleurodiscus* in the *Annals of the Missouri Botanical Garden* for September, 1918, includes 14 North American species, all of which are illustrated by text-figures showing microscopic characters. According to the author, 25 species have been recognized for the genus: 8 in Europe, 5 in Asia and Australia, 2 in Africa, and 2 in South America. Most of our species are of local distribution. They are as follows: *Aleurodiscus amorphus* (Pers.) Rabenh.; *A. Farlowii* Burt sp. nov., on dead hemlock twigs in New Hampshire and New York; *A. Oakesii* (Berk. & Curt.) Cooke; *A. apiculatus* Burt sp. nov., on fallen dead wood in Jamaica, Porto Rico, and Grenada; *A. candidus* (Schw.) Burt comb. nov.; *A. strumosus* (Fries) Burt comb. nov.; *A. seriatus* (Berk. & Curt.) Burt comb. nov.; *A. nivosus* (Berk. & Curt.) v. Höhn. & Litsch.; *A. acerinus* (Pers.) v. Höhn. & Litsch.; *A. botryosus* Burt sp. nov., on dead stems of *Rubus* and *Vitis* in Massachusetts, Maryland, and Mexico; *A. cremeus* Burt sp. nov., on dead oak wood in New Mexico; *A. tenuis* Burt sp. nov., on dead twigs in Cuba; *A. penicillatus* Burt sp. nov., on dead wood of *Pseudotsuga* and *Tsuga* in Idaho, Washington, and Oregon; and *A. Weirii* Burt sp. nov., on decaying wood of *Abies*, *Thuja*, and *Larix* in Idaho and British Columbia.

The North American species of the genus *Hymenochaete* are treated by Burt in the *Annals of the Missouri Botanical Garden* for November, 1918; the majority of the 37 species included

being illustrated by halftones of the hymenophores and figures in the text showing the character of the setae. According to the author, in the simplest condition of the fructification in this genus, only a setigerous layer is present; in the next degree higher of development, a hyphal layer connects the setigerous layer with the substratum or may be extended from the substratum as the upper surface of the pileus; while in a still more highly developed condition, the hyphal layer, is differentiated into an intermediate layer and a denser and dark zone, and usually into a second hyphal layer adnate to the substratum or forming the surface of the pileus. In addition to the distinctive morphological character of elongated, conical setae in the hymenium, there is also a chemical substance in the tissue of all the species of *Hymenochaete* studied, that causes an immediate darkening of sections when dilute potassium hydrate is brought in contact with them. *Hymenochaete* is a genus of tropical species rather than of the cooler portion of the north temperate zone; for, in contrast with the 29 species occurring from the Gulf States to Brazil, only 13 species are known north of the latitude of Virginia, and from Europe perhaps 9 species, of which 6 are well known.

The following species are described as new: *H. borealis* Burt sp. nov., on dead frondose wood from Ontario to New Jersey; *H. reflexa* Burt sp. nov., on dead wood in Jamaica; *H. cubensis* Burt sp. nov., on dead wood in Cuba and Porto Rico; *H. unguolata* Burt sp. nov., on dead wood in Mexico; *H. digitata* Burt sp. nov., on dead logs in Panama; *H. fulva* Burt sp. nov., on fallen branches in Louisiana and Jamaica; *H. pinnatifida* Burt sp. nov., on fallen branches from Georgia to Louisiana and in Mexico, Cuba, and Jamaica; *H. multisetae* Burt sp. nov., on fallen branches in Cuba and Jamaica; *H. anomala* Burt sp. nov., on fallen branches in Cuba; and *H. opaca* Burt sp. nov., on dead branches in Jamaica.

ONYGENA EQUINA (WILLD.) PERS.

On May 1, 1920, I collected excellent specimens of *Onygena equina* (Willd.) Pers. on cow's horns and on part of a cow's hoof

in Morgan's woods, north of Macdonald College, Quebec, Canada. So far as I can ascertain the horns and hoofs had been lying in the woods for some five years, the cattle having been killed and buried there as being tubercular.

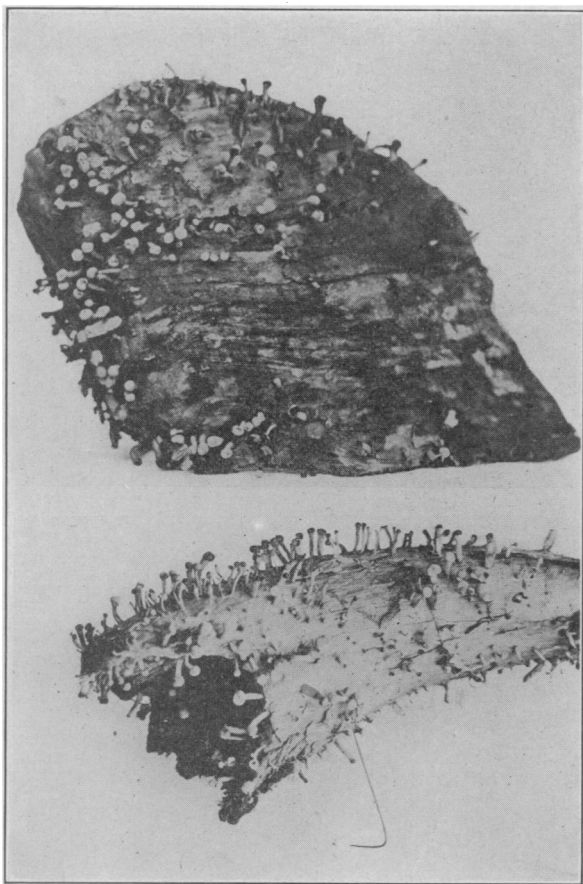


Fig. 1. The upper specimen shows fructifications on a cow's hoof. The variation in the size of sporocarps is noticeable, and the uppermost and lowest show the gleba exposed by dehiscence of the peridium. In the lower specimen figured, some sporocarps are seen to have developed from the inner surface of the horn.

The development of sporocarps was so good that photographic records were made. In each photograph variations in the size

of head and length of stipe are easily seen. The dehiscence of the peridium is plain and the exposed mass of spores and capillitium appears dark in the photographs as in nature.

Marshall Ward gives a very complete description of the fungus and of his cultural experiments with it in Vol. 191 B of the Philosophical Transactions of the Royal Society of London for 1899. A brief description of the fungus may not be out of place:

Fructification rounded, stalked or sessile, 1 to 5 mm. in height; peridium whitish, dehiscing irregularly or in lobes; asci globoid, 8-spored, 10 to 14 μ by 14 to 22 μ ; ascospores yellowish to hyaline, 4 to 5 μ by 7 to 9 μ .

The asci are very difficult to obtain in good condition when dissecting sporocarps which are mature or nearly so since they readily rupture and collapse after the dispersal of the ascospores.

B. T. DICKSON.

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A NEW AMANITA

This species is dedicated to the discoverer, Professor H. L. Wells, of the Sheffield Scientific School of Yale University, who has carefully studied it for several years. The accompanying description is drawn up from his ample field notes and photographs. Limited space forbids further discussion of this beautiful species here, but a more extended treatment will be prepared by Dr. Kelly and Mr. Krieger from notes and illustrations which I shall furnish them.

Venenarius Wellsii sp. nov.

Pileus globose to convex, at length expanded, becoming nearly plane, gregarious, 5 to 10 cm. broad when expanded; surface dry, salmon-colored, fading, especially after a rain, usually remaining more deeply colored on the disk, covered with exceedingly minute, yellowish-buff warts, mostly distributed irregularly in large patches; margin of young plant usually showing a very delicate, bright-yellow tomentum, not striate at first, but becoming distinctly so and showing the gills about halfway to the center, extending beyond the gills about 2 to 3 mm. forming a conspicuous sterile edge, colored like the pileus when viewed from below:

context easily separable from the cuticle, bright-yellow, becoming buff with age, at first mild to the taste, but with a lingering unpleasantness; lamellae free or adnexed, about 1 cm. wide to narrower at the stipe, moderately crowded, pale-dull-yellow, edges at first distinctly furfuraceous; spores ellipsoid, smooth, rounded at the ends, obliquely apiculate at the base, hyaline, uni-guttulate, $12 \times 7 \mu$; stipe tapering upward, bulbous at the base, stuffed or hollow, clothed with a very delicate, furfuraceous layer above the annulus, nearly glabrous below, pale-dull-yellow, 7 to 12 cm. long; annulus distinctly yellow, very delicate and loosely woven, thin, usually adhering to the margin of the cup in an appendiculate way after rupture, and leaving but a slight, delicate ring on the stipe; volva very delicate and loosely woven, distinctly yellow, sometimes pointed, but more often nearly flat at the base, soon glabrous, becoming less distinct with the growth of the plant.

Type collected in the township of Springfield, New Hampshire, about September 1, 1917. Known from several other localities in New Hampshire, also.

For the benefit of those following Saccardo, I add the combination **Amanita Wellsii**.

W. A. MURRILL.

CULTURES OF PUCCINIA CLEMATIDIS (DC.) LAGERH. AND PUCCINIA IMPATIENTIS (SCHW.) ARTH.

During 1917 and 1918 the baneberries, *Actaea alba* (L.) Mill. and *A. rubra* (Ait.) Wild., which grew in a small wood near Ste. Anne de Bellevue, P. Q., were heavily infected with aecia. Field evidence suggested the connection of these aecia with *Puccinia Clematidis* (DC.) Lagerh. on *Hystrix patula* Moench. Roots of *Actaea rubra* were dug up in the fall and kept in a cool cellar during the winter. When placed in a greenhouse in the spring, they developed rapidly. Wintered telial material of *Puccinia Clematidis* on *Hystrix patula* was tested and found visible. Inoculations were made on three pots of *Actaea rubra* on April 28th. Aecia were first noticed on May 5 and a very heavy infection developed. One pot of plants kept as a check remained free from infection. The inoculations and observations connected with these cultures were made by Mr. P. I. Bryce, of the Biology Department of Macdonald College, who also made the

collections and field observations on *Actaea* that suggested them.

The aecia on the infected plants, especially on the stems, produced abundant ascospores for some time. A number of grasses grown from seed in the greenhouse were inoculated with aeciospores from these cultures and also from aecia collected in the field on *Actaea rubra* at Ste. Anne de Bellevue. These inoculations and the observations in connection with them were made by Miss Margaret Newton, a graduate student of Macdonald College. The results are given in tabular form below.

Grass Inoculated	Source of Material	Date of Inoculation	Date of Uredinia	Nature of Infection
<i>Elymus canadensis</i> L.....	Aeciospores from culture on <i>Actaea</i>	June 13	June 22	Very heavy infection
<i>Elymus virginicus</i> L.	" " "	" "	" 23	" " "
<i>Hordeum jubatum</i> L.	" " "	" "	" "	Slight infection
<i>Hystrix patula</i> Moench.....	" " "	" "	" "	Very heavy infection
<i>Agropyron repens</i> (L.) Beauv.	" " "	" "	" "	No infection
<i>Agropyron Richardsonii</i> Schrad.	" " "	" "	" "	Very heavy infection
<i>Bromus ciliatus</i> L....	" " "	July 12	—	No infection
<i>Elymus virginicus</i> L.	" " "	" "	July 21	Very heavy infection
<i>Agropyron Richardsonii</i>	" " "	" "	Telia Aug. 13	No infection
<i>Hystrix patula</i>	" " "	" "	—	No infection
" "	" " "	" "	No record	Very heavy infection
" "	Aeciospores from field collection on <i>Actaea</i>	" 10	July 20	" " "
<i>Elymus canadensis</i> .	" " "	" "	Telia Aug. 13	" " "
" <i>virginicus</i> .	" " "	" "	July 19	" " "

The material from the cultures was studied by Dr. E. B. Mains with the aid of Dr. Arthur's herbarium. He found that the aecial and telial material corresponded to the herbarium material of the European *Puccinia Actaeae-Elymi* Mayor and *P. Actaeae-Agropyri* Ed. Fisch. The urediniospores were somewhat smaller than is usual in *Puccinia Clematidis*. It seemed as if all these should be considered as belonging to one species, but probably representing several races for whose delimitation further culture work is necessary. They all belong in the species *Puccinia Clematidis* (DC.) Lagerh. as it has been considered by Arthur in North America.

These experiments and studies seem to establish the connec-

tion of the aecia on *Actaea rubra* (Ait.) Wild. with *Puccinia Clematidis* (DC.) Lagerh on *Hystrix patula* Moench. and also show that *Elymus canadensis* L. and *E. virginicus* L. are congenial hosts.

Further experiments were made at Saskatoon, conducted by Miss Hulda Haining, with aecia collected at Brandon, Man., on *Thalictrum dasycarpum* Fischer & Lall. Inoculations were made on the following grasses grown from seed in the greenhouse: *Bromus ciliatus* L., *B. latiglumis* (Shear) Hitchk., *Elymus canadensis* L., *E. virginicus* L., *Agropyron repens* (L.) Beauv., *A. Smithii* Rydb., *A. tenerum* Vasey, *A. Richardsonii* (Trin.) Schrad, and *Hordeum jubatum* L. *Bromus ciliatus* and *latiglumis* were heavily infected and uredinia and telia developed abundantly. *Elymus canadensis* and *E. virginicus* were also heavily infected, but the others showed no infection. On *Bromus* the teliospores were of the many-celled type, on *Elymus* they were of the ordinary two-celled kind. It seems probable that the plants of *Thalictrum* used in the cultures contained a mixture of aecia of two races, one infecting *Bromus* and producing multicellular teliospores, and the other *Elymus* with the two-celled type of teliospores, as was indicated by the experiments in 1918. (See under *Puccinia Agropyri* E. & E. Mycologia **11**: 131. 1919.)

PUCCINIA IMPATIENTIS (Schw.) Arth.

Inoculations were made in the greenhouse at Saskatoon with aeciospores from aecia collected at Dauphin, Man., on *Impatiens biflora* Walt. on the following grasses grown from seed in the greenhouse: *Agropyron Smithii*, *A. tenerum*, *A. Richardsonii*, *Hordeum jubatum*, *Elymus canadensis*, *E. virginicus*, and *Triticum vulgare*. There was a slight infection of *A. tenerum*, *A. Richardsonii*, and *Hystrix patula* and rather heavy infection of *Elymus canadensis* and *E. virginicus* and heavy infection of *Hordeum jubatum*. Three inoculations were made on *Hordeum jubatum* and heavy infection resulted in each case. (See Mycologia **11**: 131. 1919.)

Inoculations were also carried out at Macdonald College by Miss Margaret Newton with aecia on *Impatiens biflora* Walt. collected at Hudson, P. Q., on the following grasses grown from

seed in the greenhouse: *Hordeum jubatum*, *Elymus canadensis*, *E. virginicus*, and *Hystrix patula*. Both species of *Elymus* were very heavily infected and *Hordeum* was slightly infected. Another inoculation was made on *Hordeum jubatum* and slight infection followed. As the plants of *Hordeum jubatum* used in these experiments were not in a healthy condition little value can be placed on the results which tend to show that *Hordeum jubatum* is not a congenial host in Eastern Canada. Arthur has shown by several cultures that the aecia on *Impatiens* are connected with *Puccinia Impatiensis* on *Elymus*.

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